**EGCO477 Penetration Testing and Prevention**

**SO1. An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics.**

**Passing criterion >= 70%**

PI 1-3 Demonstrates knowledge of translation of theory to real world applications and/or engineering practices

PI 1-5 Demonstrates the ability to identify the problems

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**Project 2: นำเสนอโครงงานที่เป็นช่องโหว่ในระบบ Web Server และ Web Application ที่พบระหว่างปี 2018-2020 และเสนอวิธีการป้องกันและแก้ไข** [25 คะแนน]

| **Student No.** | **PI 1-1 (Marks)** | **PI 1-5 (Marks)** | **Pass(>=17.5)** |
| --- | --- | --- | --- |
| 1 | 25 | 25 | ✓ |
| 2 | 25 | 25 | ✓ |
| 3 | 20 | 20 | ✓ |
| 4 | 25 | 25 | ✓ |
| 5 | 25 | 25 | ✓ |
| 6 | 25 | 25 | ✓ |
| 7 | 20 | 20 | ✓ |
| 8 | 25 | 25 | ✓ |
| 9 | 25 | 25 | ✓ |
| 10 | 25 | 25 | ✓ |
| 11 | 25 | 25 | ✓ |
| 12 | 25 | 25 | ✓ |
| 13 | 25 | 25 | ✓ |
| 14 | 25 | 25 | ✓ |
| 15 | 25 | 25 | ✓ |
| 16 | 20 | 20 | ✓ |
| 17 | 25 | 25 | ✓ |
| 18 | 20 | 20 | ✓ |
| 19 | 25 | 25 | ✓ |
| 20 | 25 | 25 | ✓ |
| Number of Pass |  |  | 20 |

PI 1-3 Attainability = 20/20 = 100 % **Attainable**

PI 1-5 Attainability = 20/20 = 100 % **Attainable**

**SO5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objective.**

**Passing criterion >= 70%**

PI 5-1 Assign the appropriate tasks and establish plans to finish work and meet goals on time

PI 5-2 Create fair collaboration

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**Project 1: นำเสนอโครงงานที่เป็นช่องโหว่ในระบบคอมพิวเตอร์ที่พบระหว่างปี 2018-2020 และเสนอวิธีการ ป้องกันและแก้ไข** [25 คะแนน]

| **Student No.** | **PI 5-1 (Marks)** | **PI 5-2 (Marks)** | **Pass(>=17.5)** |
| --- | --- | --- | --- |
| 1 | 25 | 25 | ✓ |
| 2 | 25 | 25 | ✓ |
| 3 | 25 | 25 | ✓ |
| 4 | 21 | 21 | ✓ |
| 5 | 25 | 25 | ✓ |
| 6 | 25 | 25 | ✓ |
| 7 | 25 | 25 | ✓ |
| 8 | 25 | 25 | ✓ |
| 9 | 21 | 21 | ✓ |
| 10 | 25 | 25 | ✓ |
| 11 | 25 | 25 | ✓ |
| 12 | 25 | 25 | ✓ |
| 13 | 25 | 25 | ✓ |
| 14 | 25 | 25 | ✓ |
| 15 | 19 | 19 | ✓ |
| 16 | 21 | 21 | ✓ |
| 17 | 25 | 25 | ✓ |
| 18 | 21 | 21 | ✓ |
| 19 | 25 | 25 | ✓ |
| 20 | 19 | 19 | ✓ |
| Number of Pass |  |  | 20 |

PI 5-1 Attainability = 15/20 = 75 % **Attainable**

PI 5-2 Attainability = 20/20 = 100 % **Attainable**

**SO6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.**

**Passing criterion >= 70%**

PI 6-2 Determines data that are appropriate to collect and selects appropriate equipment, protocol

PI 6-3 Uses appropriate tools to analyze data and verifies and validates experimental results

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**Exercise 1: SQL injection**

[10 คะแนน] ให้ นศ. ทำการทดสอบความปลอดภัยของ Web Server เพื่อค้นหาช่องโหว่ประเภท SQL injection

| **Student No.** | **PI 6-2 (Marks)** | **PI 6-3 (Marks)** | **Pass(>=7)** |
| --- | --- | --- | --- |
| 1 | 0 | 0 | 🗶 |
| 2 | 0 | 0 | 🗶 |
| 3 | 0 | 0 | 🗶 |
| 4 | 0 | 0 | 🗶 |
| 5 | 10 | 10 | ✓ |
| 6 | 10 | 10 | ✓ |
| 7 | 7 | 7 | ✓ |
| 8 | 10 | 10 | ✓ |
| 9 | 9 | 9 | ✓ |
| 10 | 10 | 10 | ✓ |
| 11 | 7 | 7 | ✓ |
| 12 | 9 | 9 | ✓ |
| 13 | 9 | 9 | ✓ |
| 14 | 7 | 7 | ✓ |
| 15 | 7 | 7 | ✓ |
| 16 | 10 | 10 | ✓ |
| 17 | 8 | 8 | ✓ |
| 18 | 7 | 7 | ✓ |
| 19 | 7 | 7 | ✓ |
| 20 | 5 | 5 | 🗶 |
| Number of Pass |  |  | 15 |

PI 6-2: Attainability = 15/20 = 75% **Attainable**

PI 6-3: Attainability = 15/20 = 75% **Attainable**

**Exercise 2: XSS**

[10 คะแนน] ให้ นศ. ทำการทดสอบความปลอดภัยของ Web Server เพื่อค้นหาช่องโหว่ประเภท XSS

| **Student No.** | **PI 6-2 (Marks)** | **PI 6-3 (Marks)** | **Pass(>=7)** |
| --- | --- | --- | --- |
| 1 | 0 | 0 | 🗶 |
| 2 | 5 | 5 | 🗶 |
| 3 | 9 | 9 | ✓ |
| 4 | 7.5 | 7.5 | ✓ |
| 5 | 10 | 10 | ✓ |
| 6 | 10 | 10 | ✓ |
| 7 | 7.5 | 7.5 | ✓ |
| 8 | 10 | 10 | ✓ |
| 9 | 10 | 10 | ✓ |
| 10 | 10 | 10 | ✓ |
| 11 | 7 | 7 | ✓ |
| 12 | 7.5 | 7.5 | ✓ |
| 13 | 5 | 5 | 🗶 |
| 14 | 5 | 5 | 🗶 |
| 15 | 5 | 5 | 🗶 |
| 16 | 5 | 5 | 🗶 |
| 17 | 7.5 | 7.5 | ✓ |
| 18 | 5 | 5 | 🗶 |
| 19 | 5 | 5 | 🗶 |
| 20 | 5 | 5 | 🗶 |
| Number of Pass |  |  | 11 |

PI 6-2: Attainability = 11/20 = 55% **Attainable**

PI 6-3: Attainability = 11/20 = 55% **Attainable**

**SO7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.**

**Passing criterion >= 70%**

PI 7-1 Able to find information relevant to problem solution without guidance

PI 7-2 Selects appropriate techniques and tools for a specific engineering task and compares results with results from alternative tools or techniques

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**Final Exam**

[30 คะแนน] ให้ นศ. ทำการทดสอบความปลอดภัยของ Web Server เพื่อค้นหาช่องโหว่และแสดงผลลัพธ์ของการ ทดสอบเจาะระบบเป้าหมายด้วยช่องโหว่ที่ตรวจพบ

| **Student No.** | **Score (30)** | **PI 7-1 (>=70%)** | **PI 7-2 (>=70%)** |
| --- | --- | --- | --- |
| 1 | 15 | 🗶 | 🗶 |
| 2 | 28 | ✓ | ✓ |
| 3 | 5 | 🗶 | 🗶 |
| 4 | 15 | 🗶 | 🗶 |
| 5 | 30 | ✓ | ✓ |
| 6 | 30 | ✓ | ✓ |
| 7 | 18 | 🗶 | 🗶 |
| 8 | 27 | ✓ | ✓ |
| 9 | 25 | ✓ | ✓ |
| 10 | 15 | 🗶 | 🗶 |
| 11 | 19 | 🗶 | 🗶 |
| 12 | 25 | ✓ | ✓ |
| 13 | 18 | 🗶 | 🗶 |
| 14 | 5 | 🗶 | 🗶 |
| 15 | 5 | 🗶 | 🗶 |
| 16 | 21 | ✓ | ✓ |
| 17 | 30 | ✓ | ✓ |
| 18 | 5 | 🗶 | 🗶 |
| 19 | 12 | 🗶 | 🗶 |
| 20 | 12 | 🗶 | 🗶 |
| Number of Pass |  | 36 | 35 |

PI 7-1: Attainability = 8/20 = 40% **Not Attainable**

PI 7-2: Attainability = 8/20 = 40% **Not Attainable**

**SO1 Conclusion**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PI** | **Attainability** | **Reason** | **Remedial Action** | **Action plan** | **Measurements** |
| 1-3 | ✓ |  |  |  |  |
| 1-5 | ✓ |  |  |  |  |

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**SO5 Conclusion**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PI** | **Attainability** | **Reason** | **Remedial Action** | **Action plan** | **Measurements** |
| 5-1 | ✓ |  |  |  |  |
| 5-2 | ✓ |  |  |  |  |

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**SO6 Conclusion**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PI** | **Attainability** | **Reason** | **Remedial Action** | **Action plan** | **Measurements** |
| 6-2 | ✓ |  |  |  |  |
| 6-3 | ✓ |  |  |  |  |

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**SO7 Conclusion**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PI** | **Attainability** | **Reason** | **Remedial Action** | **Action plan** | **Measurements** |
| 7-1 | 🗶 | Exercises and Project were done as a group, so they can share knowledge. However, the final exam was done as individual exam. Some students might not concentrate enough. | Having more numbers of quiz and lab exam individually in the class before the final exam | Next academic year | Next academic year |
| 7-2 | 🗶 | Exercises and Project were done as a group, so they can share knowledge. However, the final exam was done as individual exam. Some students might not concentrate enough. | Having more numbers of quiz and lab exam individually in the class before the final exam | Next academic year | Next academic year |